

REMARKS

The Present Invention

The present invention relates to methods of treating a set gypsum-containing material. The methods comprise applying to the set gypsum-containing material at least one member from each of at least two of the following types of inorganic phosphate salts: monobasic phosphate salts, trimetaphosphate salts, and acyclic polyphosphate salts having at least three phosphate units.

The Pending Claims

Claims 14-32 are pending currently and are directed to the method. Reconsideration of the pending claims is respectfully requested.

The Amendments to the Claims

Claims 1-13 and 33-36 have been canceled without prejudice as directed to the non-elected inventions. Applicants expressly reserve the right to pursue the cancelled claims in one or more divisional applications.

Summary of the Office Action

Claims 14-31 stand rejected under 35 U.S.C. § 102(b) as being anticipated by WO 00/06518 (Yu et al.), or U.S. Patent No. 6,409,824 (Veeramasuneni et al.). Claim 32 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over WO 00/06518 or U.S. Patent No. 6,409,824, either of which in view of U.S. Patent No. 4,174,230 (Hashimoto et al.).

Discussion of the Anticipation and Obviousness Rejections

The anticipation and obviousness rejections are believed to be improper because the references cited in the Office Action (even in combination) fail to meet the features recited in the pending claims. In this respect, the anticipation and obviousness rejections are predicated on WO 00/06518 (the '518 application) and U.S. Patent No. 6,409,824 (the '824 patent). The present invention (as defined by

the pending claims), however, is quite different from the '518 application and the '824 patent, and there is no suggestion in the '518 application or the '824 patent, or the other cited reference (i.e., U.S. Patent No. 4,174,230) for that matter, as to how to modify the disclosures of the '518 application and the '824 patent to achieve the present invention.

By way of background, it is noteworthy that gypsum-containing materials may differ with respect to a variety of characteristics such as surface hardness, abrasion resistance, water erosion resistance, paintability, thermal stability, dimensional stability, strength and the like (see, e.g., page 6, lines 24-30, of the present application). It is known that treating set gypsum with phosphate compounds will impart particular desirable characteristics to the set gypsum. However, in accordance with the present invention, the present inventors have found a synergistic effect by using *particular combinations of phosphate materials, namely, 1) monobasic phosphate salts; 2) trimetaphosphate salts; and 3) acyclic phosphate salts.* Significantly, when at least two of these groups of phosphates are represented in the method of treating a set gypsum-containing material, as explicitly recited in the pending claims, a synergistic effect with respect to at least one of the aforementioned characteristics (e.g., surface hardness, abrasion resistance, water erosion resistance, paintability, thermal stability, dimensional stability, strength) results. The cited art does not teach the claimed combinations of phosphates nor the synergistic effects found by the present inventors.

Neither the '518 application nor the '824 patent teaches or suggests the claimed combinations of phosphates. Both references disclose the use of a phosphate compound, or such a phosphate together with a polymer. In some cases, the cited references disclose, for example, the use of a member of the class of polyphosphate compounds, and "mixtures thereof." However, such a statement does not provide a disclosure or suggestion of the particular combinations of the *two or more different types* of phosphate materials, as specifically recited in the pending claims.

For example, the '518 application discusses the use of different phosphate compounds to treat "calcium sulfate dihydrate" casts in Example 12 (starting at

page 62, line 1), in which various phosphate compounds, such as phosphoric acids, salts or ions of condensed phosphates and monobasic salts or monovalent ions of orthophosphates, are used to treat set and dried calcium sulfate dihydrate boards and cubes. Similarly, in Example 3 of the '824 patent (starting at col. 14, line 61), the '824 patent describes the post-set treatment of calcium sulfate dihydrate with an organic polyphosphonic compound. However, neither reference discloses, nor reasonably suggests, a *combination of at least one member from each of at least two of the types of phosphate materials*, as specifically recited in the pending claims.

Accordingly, the anticipation rejection is improper and should be withdrawn.

Furthermore, the pending claims also are not rendered obvious because, for example, there is no suggestion in the cited references of the advantageous synergistic effects that result from the presently claimed combinations of phosphates, as exemplified in the present application.

Notably, the methods of the present invention result in an unexpected improvement in at least one characteristic, by use of the claimed combinations. It is known that in certain applications of set gypsum-containing compositions, enhancement of at least one characteristic of the set gypsum-containing composition may be desirable. For example, in veneer plasters, it may be desirable to increase the surface hardness and strength of the veneer plaster (see, e.g., Application, page 3, lines 25-28); in the case of floor underlays, increased resistance to heat and water erosion may be desirable (see, e.g., Application, page 4, lines 19-23). Thus, the improvement of at least one characteristic may be achieved in accordance with the present invention, by use of the claimed combination of phosphate materials, the improvement of at least one characteristic depending upon the characteristics required of the set gypsum-containing product (see Application, page 17, line 10). The Examples of the present application demonstrate this synergistic effect of the claimed combinations in the improvement of one or more desirable characteristic. This

result is unexpected over the general disclosure of the use of phosphate compounds as described in the cited references.

Furthermore, contrary to the assertion made in the Office Action, the '518 application does not teach a method of coating a *set* gypsum containing material comprising applying to the material composition formed from water, *binder including latex and polyvinyl acetate*, filler and at least one or more enhancing materials. In embodiments wherein the material composition is formed from such a mixture according to the '518 application, the composition is used "for producing a material employed to finish a joint between edges of gypsum boards" ('518 application, page 22, line 23 to page 23, line 23). The mixtures described in this portion of the specification of the '518 application relate to a *pre-set* application, and not to the methods of treating *set* gypsum-containing material (i.e., *post-set*) as recited in the pending claims.

Similarly, the '824 patent also does not describe the application of a material including a latex binder to a *set* gypsum-containing material, as suggested in the Office Action. As recognized by the Office Action, the '824 patent discloses the latex binder to a composition *formed from* water, latex binder, and other ingredients – i.e., a *pre-set* treatment. The pending claims specifically recite a method of treating a *set* gypsum-containing material. As such, the latex binder as described in the '824 patent in a *pre-set* treatment fails to meet the methods of the pending claims.

Claim 32 depends from, and therefore incorporates the limitations of, claim 14 (with claim 31 acting as an intervening claim). As described above, however, neither the '518 application nor the '824 patent teaches or suggests a method of treating a *set* gypsum-containing composition that comprises the use of two or more types of phosphate materials as recited in the pending claims. The disclosure of U.S. Patent No. 4,174,230 (Hashimoto et al.) does not cure the deficiencies of the '518 application and the '824 patent with respect to the pending claims. Accordingly, the rejection under 35 U.S.C. § 103(a) also is believed to be improper.

In re Appln. of Yu et al.
Application No. 09/992,302

Since the cited references fail to disclose or suggest the present invention as recited in the pending claims, the present invention is patentable over the cited references. Accordingly, the anticipation and obviousness rejections should be withdrawn and the application allowed.

Conclusion

The application is considered in good and proper form for allowance, and the Examiner is respectfully requested to pass this application to issue. If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,



Salim A. Hasan, Reg. No. 38,175
LEYDIG, VOIT & MAYER, LTD.
Two Prudential Plaza, Suite 4900
180 North Stetson
Chicago, Illinois 60601-6780
(312) 616-5600 (telephone)
(312) 616-5700 (facsimile)

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